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COMPREHENSION CONSIDERATIONS IN SWRL READING INSTRUCTION

David W. Bessemer and Charles M. Jenkins

The present paper outlines possible specifications for components of reading comprehension assessment which may be usefully developed for incorporation in the SWRL Beginning Reading Program. Language elements are identified in the reading materials which can be used to focus a diagnostic evaluation of reading comprehension. The means by which comprehension testing instruments can be integrated into the existing instructional system is also described.

Most current conceptualizations of the reading process (Gibson, 1970; Ruddell, 1970; Crosby & Liston, 1969; Mackworth, 1971) recognize two major kinds of subprocesses. One kind of subprocess, decoding, requires discrimination of orthographic cues and production of some representation of the natural spoken language corresponding to the written language. A second kind of subprocess, interpretation, requires syntactic and semantic processing of the language representation to extract the conceptual information which forms the content of the message. A third kind of subprocess, utilization, probably also should be recognized as involving the decision-making processes needed to meet the requirements of the task which established the purpose for reading. Both interpretation and utilization processes have been traditionally included under the rubric of comprehension.

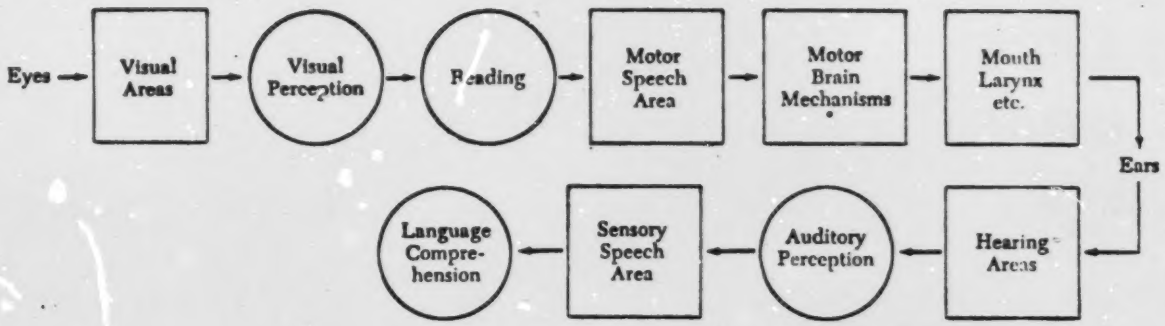
The SWRL Beginning Reading Program is grounded largely on analysis of the decoding process, and with good reason. The attainment of decoding ability is clearly prerequisite to the interpretation and

utilization of message-content in reading. However, concern for the development of comprehension should not be delayed until decoding skills are completely mastered, but should accompany the acquisition of decoding ability. Components relating to comprehension are therefore needed to accompany the existing components which relate to decoding.

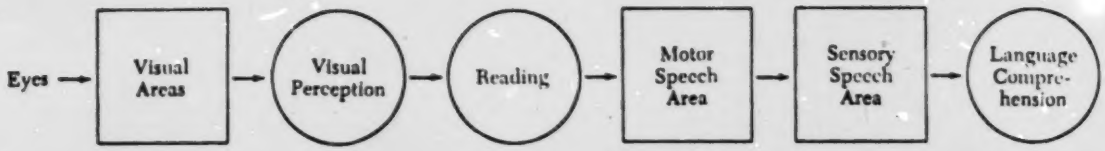
Crosby and Liston (1969) have provided one very straightforward exposition of the normal developmental relation between decoding and comprehension as illustrated in Figure 1. In first-level reading, written language is decoded to overt spoken language, and the resulting input to the auditory speech processing system is comprehended in the same fashion as the ordinary speech which the child has been hearing before he began to read. In second-level reading, overt speech is suppressed, but the brain functioning of motor-speech mechanisms continue to provide input to the auditory speech processing system to attain comprehension. In third-level reading, only reached by a small minority of readers, writing is decoded directly to conceptual message, by passing the motor-speech and auditory mechanisms. Conceived in this way, the attainment of comprehension initially requires the direct transfer of the child's speech comprehension abilities to performance of the reading comprehension task.

The adoption of such a conceptualization, or one very like it, provides the basic rationale for a phonics-based reading program. Of course, speech mediation of comprehension is not essential to reading, since deaf children learn to read. Nevertheless, there is

First-Level Reading



Second-Level Reading



Third-Level Reading

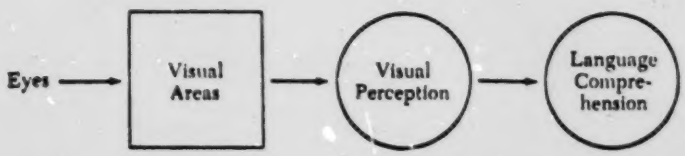


Figure 1. Schematic representation of three developmental levels in reading. (Crosby & Liston, 1969).

every reason to believe that relations between orthographic cues and pronunciation are an important aspect of early reading acquisition in normal children whether such relations are explicit in the instruction or not (Gibson, 1968; Koehler, 1971).

The transfer from speech to reading comprehension cannot be assumed to occur entirely without difficulty, since there is considerable psychological and physiological evidence (Broadbent, 1958) for attentional competition between the visual and auditory modalities. Furthermore, Gillooly (1971) cites evidence that regular spelling-sound correspondences, as in German, or with the use of the I.T.A. spelling, produces greater word recognition, but minimal added facilitation of comprehension. At the very least, beginning reading programs should provide components assessing comprehension, to provide direct evidence that effective transfer is occurring. Indeed, the task requirements of comprehension assessment may be sufficient to ensure such transfer.

If the beginning reading program emphasizes decoding to the exclusion of comprehension, the child may uncouple his speech processing system to avoid intermodality interference with the decoding process. It is known, for example, that oral production activities interfere with interpretive information processing (Weaver, Holmes, & Reynolds, 1970). The child can simplify his task considerably by failing to process the conceptual-semantic features of the message. If, however, the child is consistently confronted with assessment activities requiring full processing of the conceptual-semantic features, he should come to automatically search for meaning on the heels of

phonic decoding. Development of an integrated decoding and comprehension system would thus be encouraged. A logical conjecture is that the acquisition of such an integrated system may be prerequisite to attainment of higher-level forms of the reading process.

The comprehension assessment components should be diagnostic, capable of localizing areas of comprehension difficulty. Difficulties may arise either because the assessment task requirements are insufficient to ensure transfer, or because the reading material departs from speech which the child is capable of comprehending. It is reasonable, in early developmental efforts, to introduce explicit instructional components dealing with transfer problems, and to change the reading materials to conform to the child's speech-comprehension ability in the case of a mismatch between the written and spoken forms of language.

The initial objective of early reading instruction should be to enable the child to read and understand that which he can already understand in the form of speech. As mastery of this initial reading task is approached, the child's reading skills can be extended to deal with forms of verbal expression unique to writing, as well as the decoding of rare or technical words by the use of contextual cues, syntactical constraints, or more complicated inquiry strategies. More advanced instruction can also be designed to move toward greater utilization of the standard forms of written English (including specialized literary devices) and away from spoken English.

The reading program should not be conceived as a vehicle designed to accelerate or facilitate language development though it may turn

out to have some such effects in the end. Its primary purpose is to teach reading to the fullest extent possible within the constraints of normal language development. Influence on language development is quite another purpose, requiring other forms of instruction which should be designed for that purpose. As yet, very little is known about effects of experiential events on language development. When more is known, effective programs to achieve such effects can be designed. It is very likely that listening and speaking experiences (perhaps in a drama program vehicle) will prove far more relevant to the management of language development than experiences in reading and writing.

MEASUREMENT OF COMPREHENSION

Since comprehension cannot be directly observed, it is very poorly understood compared with the decoding process. A large number of theoretical analyses of the process have been proposed, ranging from subjective speculations about component skills to sophisticated information-processing models. To date, no systematic experimental programs have been carried out which would give a clear picture of how language, whether spoken or written, is interpreted and utilized. Most of the empirical work has been directed toward the development of improved testing procedures for the measurement of comprehension, and correlational or factor analytic studies which identify the basic dimensions of individual variation in comprehension abilities. Much relevant literature on reading comprehension has been reviewed by Davis (1971).

Based on an examination of numerous subjective analyses of comprehension then available, and types of items used to measure comprehension, Davis (1941) proposed nine operational skills of comprehension in mature readers, as described in Table 1. After constructing tests for these skills, Davis (1941, 1944) obtained scores for 421 college freshmen and performed a principle component factor analysis on the resulting matrix of intercorrelations. Five reliable factors were identified and are listed in Table 2. Substantial factor loadings of the tests from Table 1 are also given.

The five factors together account for 94% of the variance in the nine tests, but the first two alone account for 89%. Thus tests 1, 6, and 7 reflect the bulk of individual differences in comprehension, as measured by traditional objective item types. In a subsequent study (Davis, 1968) of the precent of nonchance unique variance in each test, tests 1 and 7 were found to involve about 32% and 20% unique variance, respectively. Other tests with appreciable unique (and nonchance) variance were tests 2, 3, 4, and 6.

The implications of these results for testing comprehension at the K-1 level are not entirely clear. Individual differences in the beginning reader may reflect somewhat different components. For example, there is probably little difference among mature readers in the ability to answer questions which are directly answered in the passage (Test 5) but substantial reliable differences in performance on a test of this kind very likely exist among children. A serious question also arises as to whether certain kinds of items should be

TABLE 1

NINE OPERATIONAL SKILLS OF COMPREHENSION
IN READING AMONG MATURE READERS[a]

Variable	Description
1	Word knowledge, as measured by recognition vocabulary items
2	Ability to select the appropriate meaning for a word or phrase in the light of its particular contextual setting
3	Ability to follow the organization of a passage and to identify antecedents and find references in the passage
4	Ability to select the main thought of a passage
5	Ability to answer questions which are answered directly in the passage
6	Ability to answer questions which are answered in the passage but not in the words in which the question is asked
7	Ability to draw inferences from the passage about the content of the passage
8	Ability to recognize the literary devices used in a passage and to apprehend its tone and mood
9	Ability to determine the writer's purpose, intent, and point to view; i.e., to draw inferences about the author

[a]Davis (1941, p. 23).

TABLE 2

FACTORS IN MATURE READING
COMPREHENSION FROM Davis (1944)

Factor	Test	Loading
I. Knowledge of word meanings	1	.813
	6	.341
	7	.336
II. Reasoning in reading	1	-.571
	6	.469
	7	.580
III. Concentration on literal sense meaning	6	.567
	7	-.719
	9	.366
VII. Following the structure of a passage	3	.997
VIII. Recognizing the mood and literary technique	8	.981

eliminated simply because they fail to reflect individual differences in comprehension. If the view is adopted that the tests should be criterion-referenced, not norm-referenced, items should be included if they faithfully reflect comprehension of specific language, whether or not they are useful in defining scales of general comprehension abilities. However, the results do suggest that little would be lost if tests like 3, 4, 8, and 9, which seem to involve somewhat higher-order skills, were ignored at the K-1 level. Evaluation of comprehension should be focused on tests like 1, 2, 6, and 7 which reflect (1) knowledge of word meanings, (2) literal interpretation of content, and (3) reasoning or inference based on the content.

If test items involving these abilities also are to be diagnostic of specific scources of difficulty, they will have to be designed with precision to reflect the operation of specific linguistic elements. Detailed linguistic and psychological analysis of each word, phrase, and sentence in the Mod 2 reading materials first must be performed to develop hypotheses about the functioning and contribution of each element in comprehension. Given sucy hypotheses, sets of items can be designed as miniature experiments permitting inference about the basic reason for any difficulties in comprehension.

Diagnosis of difficulties in reading comprehension, however, requires an examination of two other related kinds of abilities which have been taken more or less for granted in the above discussion. The first is ability in oral comprehension. A given language element is

not a source of difficulty in reading comprehension per se if it is not understood in speech. Thus, to identify sources of difficulty in reading comprehension, and to treat them as problems of transfer from listening to reading will require testing of oral comprehension. The fact that the words (or syntax) used in the program have been selected as high frequency items from studies of oral production of children is not sufficient to assure comprehension. The language may not be used by children with the meanings used in the materials. Empirical evidence of abilities in particular forms of understanding will be required to establish that the basic prerequisite abilities have been acquired. This is especially important for use of the program with minority groups, whose cultural experience may have equipped them with conceptual referents for many language elements quite at variance to those common to members of the majority culture.

A second ability concerns the interpretation of pictures. While most adults are quite unaware of the fact, there are important stylistic conventions involved in the representation of objects or events in a two-dimensional static medium. Since comprehension testing frequently utilizes language-picture relations, and the stories are accompanied by illustrations, difficulties in reading comprehension may actually arise from problems in picture comprehension in many cases. Thus some testing of the abilities of children to interpret pictures and relate them to oral language is also required. This is again of special importance in relation to minority groups whose environments may have been impoverished or deviant in books or magazines with the kinds of illustrations familiar to the majority group child.

ASPECTS OF MEANING

Much work remains to be done to establish an adequate analytic base for comprehension testing. Until the analyses are performed, specifications for test items will remain rather vague and general. However, a good deal can be said about the language elements on which the testing must be based, and towards which analysis must be directed.

In beginning to establish an analytic base for comprehension testing and instruction, a systematic orientation toward the nature of meaning is essential. A distinction between aspects of meaning deriving from lexical and structural sources is also important.

Language is a medium serving to transmit informative messages. The transmission of information is made possible by the fact that the elements forming the language code are socially agreed representations (or signs) of some conceptual element or structure common to the transmitter and receiver of language. This representational property of language is termed "meaning."

The meanings of oral or written language messages may be viewed as having two components, lexical meaning and structural meaning. Lexical meaning derives from the conceptual structure associated with a lexical item (word or compound). It is the psychological correspondent to a set of real-word referent entities or the properties and rule defining such a set of entities.

Structural meaning, on the other hand, is that aspect of meaning of a linguistic element (word, phrase, clause, sentence, or paragraph) determined by its relations to other linguistic elements as defined by

the syntactic structure in which the elements appear. Lexical meanings contributed by the words are modified and related by the grammatical structure.

Difficulties in comprehension can be analyzed by systematically varying the components of meaning in test items. Novel words can be tested in isolation to probe the scope of lexical meaning associated with such items. Structural modifications of the meaning of a novel word can be assessed by testing the word in structural context, where both the structure and other words are known to be correctly interpreted. Meaning derived from a novel structure can be isolated if the structure is presented using lexical items which are known to be correctly interpreted in isolation or other context.

Such variants can be used to localize comprehension difficulties arising from most content words, function words, and syntactic structures. However, for some content words and many function words, testing of a novel word will inherently involve novel syntax. In such cases, lexical and structural meaning are inextricably bound up together and cannot be separated. The best that can be done is to insure that the other words appearing with the novel word and structure do not contribute any additional component to the comprehension task.

A detailed outline of the procedures to follow in carrying out an analytic assessment strategy such as that described above, and based on the SWRL reading materials, is presented in the sections below.

COORDINATION WITH MOD 2 READING INSTRUCTION

In its current form, the SWRL Beginning Reading Program provides instruction on letter names, letter-sound correspondences, reading storybook words (including both sight words and rule-based words), word attack (sounding-out and blending rule-based words), and criterion exercises related to decoding performance. The content of an additional component dealing with comprehension remains to be specified in detail.

The instruction follows a systematic sequence. A letter's name is taught in a unit prior to the unit in which the sound correspondent for the letter is introduced. Each unit has several word-attack lessons in which the children first learn letter-sound correspondences and then learn to read new rule-based words. Subsequently, they learn new sight words (if any) and then read a story using the new sight words and some new rule-based words. If the recommendations of Koehler (1971) are followed, word-attack instruction will involve decoding of words both in isolation and meaningful context. Attainment of the unit outcomes is assessed by a criterion exercise at the end of the unit.

If the program is to consistently encourage comprehension of new words, components should be designed to deal with new words introduced in the word-attack lessons as well as those in the storybooks. Thus, it is recommended that one component (Story Comprehension) should provide instruction and assessment on elements appearing in the stories, while another (General Comprehension) should be provided following word-attack instruction based on elements appearing in that context.

Elements appearing in the stories which are available for assessment of Story Comprehension include the following:

1. New words in isolation;
2. New words in old structures;
3. New structures with old words;
4. New word-structure units;
5. Facts established by inference.

Testing of the first four types of elements would require knowledge of word meanings and literal interpretation, and should be designed to yield an analytic diagnosis of sources of difficulty in comprehension. Items of the last type should represent the more traditional approach to assessment involving logical and descriptive relations of actors and events in the plot, motivation of the actors, the main idea, sequences of events, etc. Inclusion of inference items of this sort may serve to reassure the experienced teacher that comprehension is not being dealt with in too atomistic a fashion.

Since few new words or structures are introduced in each story, it may be possible to test all of the new elements as they are introduced. A sampling of items from among those which are thought to be most important could also be added as a comprehension subtest to the criterion exercise.

Instructional components relating to word meanings and literal interpretation of structure can be introduced as needed into the pre-story decoding instruction. Need may be established by subjective

analysis, research literature, or tryout results, depending on availability. Just as the pre-story instruction is designed to facilitate decoding of new words in the story, it can be designed to facilitate comprehension of new words or structures in the story. Instruction involving inferences should accompany or follow the story, since inference is most naturally related to discussion and interpretation of story content. In both cases, instruction should dovetail closely into the meanings and interpretation found in the story at hand.

Comprehension items following word-attack instruction can be designed around elements relating to new words introduced in word-attack. Furthermore, without the constraint of particular lexical and structural meanings involved in a story, new and old syntax can be selected to deal systematically with a range of alternate meanings and interpretations involving lexical items and language structures both in and out of the stories. Thus, General Comprehension instruction can be designed to provide a base for comprehension in general reading. The assessment should be wide-ranging enough to indicate the general transfer potential of program elements to the reading of materials of all sorts.

The General Comprehension component should also provide an appropriate context relating to testing or instruction on general aspects of oral and picture comprehension, as discussed previously. Prior to the use of words or syntax in the storybooks, or pre-story instruction on these elements involving comprehension in reading, assessment and instruction on related aspects of oral and picture comprehension should be incorporated in the General Comprehension component.

ANALYSIS OF LANGUAGE ELEMENTS

Words and elements of surface structure available for testing in the first five SWRL Beginning Reading Program stories are shown in Table 3. Twelve words are introduced in these stories along with seven different types of structure. The words appear in fourteen actual realizations of these structures. Only the pronouns occur as surface subjects, with the single noun, log, occurring only as object of the preposition on in a locative adverbial. Go and play occur only as main verbs, and will as an anxiliary verb, while are appears in both roles. The prepositions on and with form adverbial prepositional phrases. There occurs as two types of adverbial, as well as an existential dummy. The determiner, the, only occurs in a unit with log.

The elements of Table 3 generate eighteen distinct surface syntactic structures which are used in the stories. These structures are shown in Tables 4 and 5 in the notation of Table 3, along with examples of each type of structure. Most of the sentences are transformational variations of a much smaller number of underlying deep syntactic structures (perhaps five in number, depending on one's analysis of the underlying forms). Even more structures would be listed if the constituents of the locative and accompaniment adverbials were recognized as distinct forms. The given listing, however, suffices for our present purposes.

Also listed in Tables 4 and 5 are a number of structures (placed in parentheses) for which the necessary lexical items were available, but which were not used. Many of these structures were used in later stories even though they were not used at their first availability.

TABLE 3

LANGUAGE ELEMENTS IN STORIES 1-5
OF SWRL MOD 2 FYCSP

Lexicon		Surface Structures		
Class	Word	Names	Symbol	Realizations
PRONOUN		Subject	S	I, me, you
	I, me, you	Verb	V	go, play, are
NOUNS		Auxiliary	Aux	will, are
	log	Adverbials		
VERBS		Locative	Loc	there, on the log
	go, play, will, are	Directive	Dir	there
ADVERB		Accompaniment	Acc	with me, with you
	there	Dummy	D	there
PREPOSITION				
	with, on			
DETERMINER				
	the			

Table 2 gives structures in which the new storybook words appeared or could have appeared. It is apparent that a large number of new sentence structures became available together with the introduction of new lexical items up through Story 4, but declined in Story 5. In contrast, the number of old structures available in which new lexical items could appear consistantly increased through Story 5.

Clearly, since few sentence types were used with the new words in Story 5, there was increased repetition of both lexical items and structures which had appeared in previous stories. It is also clear from Table 3, that there were few opportunities to create new structures using familiar lexical items at this stage. Opportunities for the occurrence of new structures with old words probably increase in later stories, after more words are available.

UTILIZATION OF ANALYSIS

Information of the sort which has been presented is essential if systematic components for instruction and assessment are to be developed. Many potential sources of comprehension difficulty are revealed in such an analysis, as the discussion below will illustrate. Furthermore, the analysis suggests how the different sources of difficulty can be isolated diagnostically, and where elements of instruction can be introduced relating to these sources.

Consider the sentences of Story 1. (Full texts of the stories are given in Appendix A.) There are three lexical items, two being function words which probably cannot be tested out of context. The

TABLE 4

SENTENCE STRUCTURES PROVIDING CONTEXTS FOR
NEW STORYBOOK WORDS

Story	New Words	Structural Context[1]	
		New	Old
1	I	SV I go	
	will	SAuxV I will go	
	go	V Go!	
		SAux I will	
		AuxSV Will I go?	
		(AuxS) (Will I?)	
2	play	(SVLoc) I play there	(SV) (I play)
	there		SAuxV I will play
		SAuxVLoc I will play there	V Play!
		VLoc Play there	(AuxSV) (Will I play?)
		(AuxSVLoc) (Will I play there?)	
		DSV There I go!	
3	me	VAcc Play with me	SV I play
	with	VLocAcc Play there with me	
4	you	(SVAcc) (I play with you)	SV You play
	are	SAuxVAcc I will play with you	(SAuxV) You will go
		(SVAcc) (You are with me)	(SAux) (You will)
		(SVLocAcc) (You are there with me)	(You are)
			AuxSV (Will you play?)
		VSLoc Are you there?	(AuxS) (Will you?)
		VSAcc Are you with me?	(SVLoc) (You play there)

[1]Structures (and examples) in parentheses were available, but not used in the story.

Story	New Words	Structural Context	
		New	Old
		LocSV There you are!	(SAuxVLoc) (You will play there)
		(SVDir) (You go there)	(AuxSVLoc) (Will you play there?)
		(SVDirAcc) (You go there with me)	
		VDirAcc Go there with me	(SVDir) (You go there)
			(SAuxVDir) You will go there
			(AuxSVDir) Will you go there?
			(SV) (You are)
			(SVLoc) (You are there)
5	on		(SVLoc) (You are on me)
	the	Loc On the log	You are on the log
	log		(SAuxV) (The log will go)
			(AuxSV) (Will the log go?)
			(SAux) (The log will)
			(SVAcc) (I go with the log)
			SVLoc I play on the log
			SAuxVLoc I will play on the log
			(VLoc) (Play on the log)
			(VAcc) (Go with log)
			(VLocAcc) (Go there with the log)
			(AuxS) (Will the log?)
			(AuxSVLoc) (Will the log go there?)
			(SAuxVAcc) (The log will go with you)
			(SAuxVDir) (The log will go there)

TABLE 5

NEW STRUCTURES INTRODUCED WITH
OLD WORDS

Story	Structure
3	(SVDir) (I go there)
	(VDir) (Go there!)
	SAuxVDir I will go there
	(AuxSVDir) (Will I go there?)
5	Loc There!
	S The log!

word go is used in the story with reference both to locomotion under one's own power and movement while riding. Items should be devised for use in the pre-story drill to determine that the children include both types of locomotion in the meaning of the word in isolation. Presumably, aspects of oral and picture comprehension relevant to interpretation of the results of the go items would also be tested. Oral and picture comprehension items are assumed to be tested as needed in all cases discussed below.

Given comprehension of go, there are two additional aspects of meaning involved in the simple sentence "I go." One is the speaker which serves as referent of the pronoun I. The speaker must be inferred from context provided by illustrations in the story. The sentence occurs several times in the story, and post-story items should be used to determine if the appropriate referents were understood. Some difficulty in reference may arise when the frog says "I go" when riding on the log being pushed by the otter. The children may take the speaker to be the otter, not the frog, since in prior cases the speaker was locomoting himself.

The second aspect is the relation between speaker and go. The sentence asserts that the lexical meaning of go is a property of the speaker. Given knowledge of the speaker, and the nature of the action, additional post-story items should be used to determine if this relation was comprehended.

The word will adds an element of intent to those features already present in "I go." Given understanding of "I go," the children should be tested to determine if the difference in "I will go," is understood.

If any difficulty in comprehension relating to I and will is anticipated, pre-story instruction and testing could be based on the basic sentences "I go" and "I will go."

Both "Go!" and "Will I go?" are syntactic transformations of the basic sentences above. In case of the imperative, the speaker and listener must be inferred from context, and post-story items should determine if these inferences were made correctly. In the second case, the use of the question indicates a state of uncertainly with respect to the applicability of the assertion, and the child's ability to discriminate the alteration in meaning should be tested. The fact that, in this particular case, the question is addressed to the speaker rather than someone else also must be inferred from the illustrations, and this feature should be tested.

The sentence "I will" involves deletion of the main verb which is directly implied by the preceding verbal context. The ability to recover the main verb from context should also be tested. "I will" is used both following the imperative to indicate accession to the command, and following the question, indicating resolution of the uncertainly. Understanding of both of these uses should also be tested.

Additional post-story questions can be designed to deal with the temporal sequence of events in the story, inferences about the personalities of the characters and their motivation at various points, and inferences about the nature of the social relations which are established in the story.

At this stage in the program there are no word-attack lessons. However, the General Comprehension component could be used at this point to provide examples and test alternate meanings of go beyond that used in the story, particularly if other meanings were used in later stories. Materials could also be devised to illustrate and test determination of speaker reference for I using the full range of possibilities.

The second story introduces the verb play, and the word there as both a locative adverb and existential dummy. The verb can be tested in isolation. Both of the basic sentence structures (SV and SVLoc) in which play and there can occur and that are not used in the stories should be introduced and tested in the pre-story instruction. The difference between there as locative and dummy should also be tested.

Probably "I play" should be introduced first and related to "I go." "I play" then provides a familiar context for the introduction of there in "I play there." "There I go" should be differentiated from "I go" and the directive "I go there" even though the use of there as a directive does not occur until Story 3.

Since I was tested previously, and presuming that it is well understood in all prior cases, it should now only be tested in the context of play to provide assurance that there is no special problem with I when it is used with a new verb. It would probably not need testing again, except in the criterion exercise.

Post-story items would be designed following the same procedure for Story 2 as that illustrated above for Story 1. A General Com-

prehension exercise could be designed around alternate meanings of play, and the question forms which are available but not used in Story 2.

This process would continually cycle through the remaining stories. Story 3 would focus on the accompaniment adverbial with me and the directive use of there. The reference of me is one aspect, the nature of the relation established by with is a second. Directive there would be compared and contrasted with the locative and dummy uses.

In a similar fashion, items before Story 4 would be focused on the use of are as a main verb, the reference of you as subject and as object of preposition in the accompaniment and adverbial. Post-story items could deal with the new question forms using adverbials, as well as the contrast between the dummy and locative uses of there in "There you go" versus "There you are." The General Comprehension component could be used to deal with the various combinations of adverbial expressions which were available, but not used in the story.

Story 5 is particularly interesting. Syntactically, this story is the first introduction into the reading program of the noun phrase (NP) structure rather than individual nouns or pronouns, (i.e., in previous stories, all references to nouns have involved personal pronouns, here for the first time we find the more usual Det+N unit). There is also the introduction of a new preposition, "on," with the concomitant introduction of a new syntactic structure as a realization

of the locative adverbial (i.e., the constituent locative adverbial may be instantiated by either the adverb "there" or by the prepositional phrase "on the log"). Not only is this introducing a new kind of locative adverbial, but it is also introducing a new function for the prepositional phrase structure. The previously introduced prepositional phrase structure was an adverb of accompaniment using the preposition with.

Clearly the prepositional phrase should be introduced and tested before the story with the familiar pronoun objects "on me" or "on you." "The log" should also be first introduced and tested in the subject position. Post-story items could then deal with the prepositional phrase combining both novel elements.

We also find in this story the first instances of exclamatory use of constituents (either a NP or a Prep P) with deletion of the major part of the sentential matrix which explicitly determines the "sentence's" meaning and the constituent's function (e.g., "The log!"). While such utterances or sentence tokens are clearly interpretable in the discourse context provided by the story, they should be tested after the story to make sure that they are correctly interpreted.

CONCLUSION

A detailed lexical and syntactic analysis of storybook content makes it easy to see what elements of meaning are present for comprehension, and how they should be arranged for instruction and testing in relation to the existing components of the SWRL Reading Program.

Given sufficient time and effort, an analysis of this kind can be completed on all the stories and word-attack materials. In addition to providing a basis for development of specifications for comprehension components, it should be of considerable assistance in selecting sentence contexts for new words presented in word-attack instruction.

It is quite another matter, however, to specify the precise nature of the comprehension test items which should be developed in relation to these language elements, if they are to perform the diagnostic function which was proposed. No existing methodology seems quite adequate for this task. Considerable additional work will be required to develop a systematic approach to the item construction problem. The same can be said for instructional procedures related to comprehension.

One difficulty arising from a diagnostic approach such as we have suggested is that far too many test items may be required for complete evaluation of comprehension. Some selection of points to be tested would then be required, and at present there is little evidence available to show which kinds of linguistic elements lead to the most difficulties and deserve the most attention. This difficulty should not be regarded as an argument for skipping over the kind of molecular analysis which we have illustrated. A detailed analysis will still be valuable as a basis for informed judgment about what to retain in the evaluation procedure and what to eliminate. Without such an analysis, we will not have any clear picture of what kind of comprehension performance is being assessed, and what prerequisite competencies are assumed to be present.

APPENDIX A

TEXT OF SWRL MOD 2 FYCSP STORIES 1-5

Story No. 1

I -12
will - 8
go -12

Total Words: 32

I WILL GO

Plot Summary: Tut, the frog, and Dash, the otter, are playing on a log in a pond when Tip, the sly fox, sees them from shore. Tip decides to join in the fun, but once out in the deep water, the fox flounders. The otter, directed by the frog, rescues the fox by pushing the log to the fox and then to shore.

Page	Illustration	Speaker	Script
1	The frog, shown in mid-air, jumps from one lily pad to another.	Frog	"I go."
2	The otter, who is standing on the bank, wishes to join the frog. He appears enthusiastic.	Otter	"I will go."
3	The otter takes a running start from the bank and heads toward a lily pad. (Illustration may show him either in act of running or mid-air.)	Otter	"I go."
4	The otter misses the lily pad altogether and lands in the water with a big splash! The frog, clinging to his lily pad, is afraid he will be upset by the waves the otter has made.	Frog	"Will I go?"
5	The surface of the pond is again calm, and the frog has managed to remain on his lily pad. The otter sits in the shallow water looking very bedraggled. The frog points to a log which is floating in the middle of the pond.	Frog	"Go."
6	The otter swims toward the log. The frog is riding on his back, cowboy style, and is waving one arm in the air.	Otter	"I will."
7	The fox, attracted by the commotion, peeks slyly through the reeds which he has parted with his paws. The frog and otter appear in the background.	Fox	"Will I go?"

Page	Illustration	Speaker	Script
8	(Close-up of fox) Having made up his mind, the fox pushes the reeds back and enters the water (one foot in) with determination.	Fox	"I will."
9	By this time, the frog and otter have reached the log. The frog sits on it and the otter pushes it from behind. The frog is happy to be getting a free ride. In the background, the fox can be seen submerged waist deep in the water.	Frog	"I go."
10	Suddenly, the frog spots the fox who is madly flailing his arms in the water and obviously is about to sink. The frog points toward the fox. The otter, still holding onto the log, looks toward the fox.	Frog	"Go. Go."
11	The excited frog is now standing on the log. The otter, churning up the water behind him, pushes furiously toward the fox.	Otter	"I will."
12	The fox, fur matted and dripping, grabs hold of the log. The frog points toward the bank. The otter is still pushing the log.	Otter	"I will go."
13	Now the three have reached the bank. The frog, one hand on hip and the other motioning toward the bank, speaks sternly to the sheepish fox. The latter stands knee-deep in the water.	Frog	"Go."
14	The fox walks up to the dry land. He smiles and waves goodbye to the frog and otter who remain in the pond.	Fox	"I will go."

First Year
Story No. 2

New Words:

play - 8
there -11

PLAY THERE

Plot Summary: Dash, the happy otter, eager to play with one of his friends, first awakens Nat, the sleeping bear, and then overturns Tut, the seated frog. Dash then goes off by himself and has fun sliding down a mud bank into a pond. Eventually the frog and bear join the otter and all play in the water together.

Page	Illustration	Speaker	Script
1	The otter, with a happy expression on his face, sets out in the forest.	Otter	"I will play."
2	The otter, heading toward brush, points to the bushes.	Otter	"I will play there."
3	Otter, near to brush, sees sleeping bear by the bushes.	Otter	"I will go there."
4	Otter attempts to arouse bear. Bear has one eye open and annoyed expression on face.	Otter	"Play. Play."
5	Bear has jumped up. He looks angry.	Bear	"Go."
6	Bear points to pond.	Bear	"Play there."
7	Otter appears offended but turns toward pond where frog sits on lily pad.	Otter	"I will play there."
8	Otter at edge of pond ready to dive toward lily pad. Frog appears frightened.	Otter	"I will go there."
9	Otter has upset lily pad and is in water. Frog is up in the air.	Frog	"There I go."
10	Angry frog sitting on rock in pond points to bank.	Frog	"Go."
11	Otter heads toward mud slide on bank.	Otter	"I will play there."

Page	Illustration	Speaker	Script
12	Otter slides down mud bank with happy expression on face.	Otter	"There I go."
13	Frog watching otter.	Frog	"I will go there."
14	Frog slides into water. Bear watches from bank. Otter watches from water.	Bear	"I will play there."
15	Bear slides into water. Otter and frog splash around. All happy.	Bear	"There I go."

Total Words: 46

First Year
Story No. 3

New Words:

with -5
me -5

PLAY WITH ME

Plot Summary: Pat, the friendly porcupine, invites Nat, the bear, to play with him, but in each game they try, the bear makes clumsy mistakes. In spite of the porcupine's help, the bear misses with darts and misses catching the ball. He is too heavy to balance with the porcupine on the seesaw. Finally, Pat gets Lil, the rabbit, and Tip, the fox, to sit with him on the seesaw so that Nat can balance happily with them.

Page	Illustration	Speaker	Script
1	The porcupine is throwing darts at a round dartboard nailed to a tree	Porcupine	"I will play."
2	The bear, emerging from a clump of bushes, walks toward the porcupine.	Porcupine	"Play with me."
3	The bear picks up a dart.	Bear	"I will."
4	Dart has missed target completely. Bear is downcast. Porcupine points to clearing in forest.	Porcupine	"Play there with me."
5	The bear, cheered, joins the porcupine. They head toward clearing.	Bear	"I will go there."
6	Porcupine has ball. He holds it up. Bear appears ready to catch it.	Bear	"I will play."
7	Bear has missed ball. He is unhappy.	Bear	"I will go."
8	As the bear moves dejectedly away, the porcupine runs to him and points to seesaw.	Porcupine	"Play there with me."
9	The porcupine sits on the down side of the seesaw. The bear stands by the up side.	Bear	"I will."

Page	Illustration	Speaker	Script
10	The bear is seated and the porcupine shoots upward because of the unequal weight distribution.	Porcupine	"There I go."
11	From the high perch on the seesaw, the porcupine calls to the rabbit who is nearby.	Porcupine	"Play with me."
12	The rabbit comes up to the seesaw and points to the middle.	Rabbit	"I will go there."
13	The rabbit sits in front of the porcupine. Seesaw is a little straighter but the porcupine is still higher than the bear. The porcupine calls to the fox nearby.	Porcupine	"Play with me."
14	The fox stands behind the seesaw and points to spot behind porcupine on top of elevated seesaw.	Fox	"I will go there."
15	With fox, porcupine, and rabbit at one end of the seesaw, and the bear at the other end, the seesaw is level. The bear is very pleased.	Bear	"I play."

Total Words: 47

First Year
Story No. 4

New Words:

you -9
are -5

ARE YOU THERE?

Plot Summary: Ann, the scatter-brained duck, asks Tip, the clever fox, to play hide and seek. Tip conceals himself under a picnic table covered with a cloth. Ann looks for the fox in the most unlikely places. She finally asks Snap, the possum, to help her. After much futile searching, Ann and Snap sit down at the picnic table and then by accident discover the fox under the cloth.

Page	Illustration	Speaker	Script
1	A duck knocks on the door of a fox's den. A possum is hanging from a tree nearby.	Duck	"Are you there?"
2	Fox opens door and is visible.	Duck	"Will you play?"
3	Fox, looking happy, comes out.	Fox	"I will play with you."
4	Duck puts wings over eyes, in the manner of hide and seek. Setting changed to picnic area with table, bench, fireplace, litter containers.	Duck	"Go."
5	Fox looking for place to hide, points to picnic table.	Fox	"I will go there."
6	Duck begins to look for fox. Duck peers into little container.	Duck	"Are you there?"
7	Duck heads toward tree where possum is hanging.	Duck	"I will go there."
8	Duck looks up in tree. Sees possum hanging there but does not see fox.	Duck	"Are you there?"
9	Duck standing under tree asks Possum's help.	Duck	"Play with me."
10	Possum climbs down from tree.	Possum	"I will play with you."

Page	Illustration	Speaker	Script
11	Possum follows duck on her search. Duck turns head around.	Duck	"Are you with me?"
12	Possum follows duck.	Possum	"I will go with you."
13	Duck points to table.	Duck	"I will go there."
14	Duck and possum sit at table. Fox peeks out from under table cloth.	Duck	"There you are."

Total Words: 50

First Year
Story No. 5

New Words:

on -5
the -7
log -7

THE LOG

Plot Summary: Dash, the otter, and Snap, the possum, are playing on a log in a pond. When Nat, the bear, jumps on the log to join in their fun, the log tips. The possum is stranded, clinging to the far side of the log, while the otter and bear land in the water. Dash directs Nat to swim to shore. Then Dash looks frantically for Snap. Finally Dash rescues the possum. With both the bear and possum safely on shore, the otter returns to playing on the log.

Page	Illustration	Speaker	Script
1	Otter is running on a log, making it go round in the water of a pond. Possum watches from shore.	Otter	"I play on the log."
2	Otter calls to possum.	Otter	"Play with me."
3	Possum jumps on log.	Possum	"I will play with you."
4	Otter and possum run on log together. Log is moving slightly away from shore.	Otter	"You are on the log."
5	Bear on shore sees otter and possum having fun.	Bear	"I will play on the log."
6	Bear gets ready to leap out to log; possum looks anxious.	Bear	"I will play with you."
7	Bear has landed on log which is partially submerged by his weight. Rest of log up in air with possum clinging to back. Otter is in water.	Possum	"The log. The log."
8	Bear has slide off log and is in water. Possum is hanging on back (far) side of log. Otter in foreground angrily directs bear to shore.	Otter	"Go there."

Page	Illustration	Speaker	Script
9	Otter still has not seen possum; otter peers at log.	Otter	"Are you there?"
10	Bear on shore points to back of log.	Bear	"There. There. On the log."
11	Otter sees possum clinging to log and exclaims.	Otter	"There you are."
12	Otter tows possum to shore; possum hangs on to otter's tail with one paw and points to shore with other.	Possum	"Go there."
13	Bear and possum, both on shore and dripping wet, are directed by otter who points to nearby grass.	Otter	"You play there."
14	Bear and possum play in background; otter heads back toward log and pond.	Otter	"I will play on the log."

Total Words: 57

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